

Amendments to the Drawings:

The drawings were objected to under 37 CFR 1.83(a) because the feature of the shutter recited in claim 41 should be shown in the drawings. Claim 41 is directed to the embodiment shown in FIG. 6 and applicants propose to add the shutter in the viewing beam path in the region between the objective 315 and the second beam splitter 314 as shown in red on the annotated sheet of FIG. 6 submitted herewith. The shutter is identified by reference numeral 350 and the disclosure is amended on page 8 to add this reference numeral.

The Examiner's approval of this drawing correction is respectfully requested.

Attachment:        Replacement Sheet  
                     Annotated Sheet Showing Changes

### Remarks

Claims 41, 42 and 50 to 52 are amended. Claims 41 to 52 are pending in this application of which claims 41, 51 and 52 are in independent form.

Claims 41 to 52 were objected to because the limitation "said data image" lacked antecedent basis. The claims are amended herein to delete the term "data image" and to substitute the term -- image data -- therefor where needed.

Also, the limitation "a video-recorder/monitor connected to the mixer" was unclear. The module 329 shown in FIG. 6 corresponds to the module 29 shown in FIG. 1 and explained at page 5, lines 16 to 19, of the applicants' disclosure as follows:

"The image sensor 25 is part of an image recording module 27 and transmits the detected image to a video monitor 29 on which the image is shown and recorded."  
(emphasis added)

From the above, it can be seen that the element 29 is both a monitor and a recorder.

Also, claims 50 and 51 lacked antecedent basis for "said reflection display" and "the clock ratio". Claims 50 and 51 as well as claim 52 are amended herein to provide a proper antecedent for the term "reflection display". These claims are also amended to delete the term "clock ratio" to instead use the term -- clock frequency -- and to provide an antecedent basis therefor.

In view of the above, applicants submit that claims 41 to 52 should no longer be objectionable.

Claims 41, 44 and 49 had been rejected under 35 USC 103(a) as being unpatentable over Miyagi in view of Zonneveld. The following will show that claim 41 patentably distinguishes the applicants' invention over this combination of references.

On page 4 of the action, the Miyagi is characterized as having:

"... an imaging recording module (20 and 25) for recording said data image (from 28a-c) and an object image (from 23) of said object (not shown); "

Applicants respectfully disagree with the above characterization of elements 20 and 25 of Miyagi. Item 20 is an endoscope used to obtain an image of an organ of a patient. The endoscope 20 is described in Miyagi in column 2, lines 40 to 53, as follows:

"More specifically, this endoscope 20 has a body 21 and a hard-tube 22 extending from the body 21. The tube 22 has an illuminating window and an observing window (both not shown) formed in a distal end of the tube 22. An illumination light is supplied from the illuminating window through a bundle of optical fibers extending through the body 21 and the tube 22. An image sensor 23 such as a CCD or the like is faced with the observing window through a lens. This image sensor 23 is connected to a control unit 25 (control means) through signal wires 24. This control unit 25 is operated to control the image sensor 23, prepares a television signal based on a picture signal from the image sensor 23 and sends it to the monitor television 30." (emphasis added)

From the above, it can be seen that the endoscope supplies light to the area of interest in the patient and sends back an image which is converted into an electrical signal by an image

sensor 23 at the distal end of the endoscope. As shown in FIG. 2 of Miyagi, this signal passes via signal wires 24 to the control unit identified by reference numeral 25. A sphygmomanometer 28a, a heartbeat meter 28b and electroencephaloscope 28c are all connected by separate wires to the control unit 25.

The control unit 25 can in no way be interpreted as part of a recorder but instead functions to prepare a picture signal indicative of a numeric figure based on blood pressure data obtainable from the sphygmomanometer 28a and prepares a picture signal representative of a numeric figure and a waveform based on heartbeat data obtainable from the heartbeat meter 28b and prepares a picture signal indicative of a waveform based on brain wave data obtainable from the electroencephaloscope 28c.

As noted in Miyagi, starting at column 2, line 64, the control unit combines the signals obtained from sphygmomanometer 28a, heartbeat meter 28b and electroencephaloscope 28c and combines them:

"... with the picture signal from the image sensor (23), and sends them to the monitor television 30. As a consequence, the numerical figures and waveforms are displayed in a certain area, for example, a right and down corner area of the screen of the monitor television 30." (parenthetical numeral added)

From the above, it can be seen that the elements 20 and 25, which are viewed as being an image recording module in the action, are really an image data supply for supplying image data to the micro-monitor television 30 which is referred to in Miyagi as the image display means as noted at 'column 2, line 30.

Accordingly, there is nothing equivalent in Miyagi to the

applicants' image recording module which is set forth in applicants' claim 41 with the clause:

"an image recording module for recording said image data and an object image of said object supplied by said viewing unit;"

Turning now to applicants' FIG. 6, the image data is taken from the image data supply 309 and is fed into a mixer 340 and the object image is supplied via the second beam splitter 314, lens 323 and image sensor 325. The output of image sensor 325 is also fed to the mixer 340. The output of the mixer is fed to the video-recorder/monitor 329. No such circuitry is suggested in Miyagi or the secondary reference, Zonneveld.

The control unit 25 in Miyagi is characterized in the action as a mixer. The control unit 25 is not a mixer in the sense of supplying the image data to an external recorder/monitor but is instead part of image data supply because this is fed into the microscope 10 for viewing by the surgeon in the same manner as the image data supply 309 supplies image data into the beam path of the surgical microscope in the applicants' invention. In contrast to Miyagi, the object image in the applicants' invention is taken from the viewing beam path of the surgical microscope via the beam splitter 314 as explained above and fed to the mixer 340. Even if the control unit 25 could be deemed to be a mixer, it is nonetheless part of the image data supply and is not a unit as in the applicants' wherein at least one input is from a very different source, namely, directly from the viewing beam path.

In the action, the view is expressed on page 4, last four

lines, that:

"Miyagi discloses the claimed invention except for the object image being supplied from by said viewing unit; a second beam splitter mounted in said viewing beam path for directing said object image onto said image sensor."

The above is only a portion of what Miyagi does not show and applicants respectfully submit that Miyagi does not disclose all of the features and limitations set forth in the following clauses of claim 41 which is much more than the above two features noted in the action. Stated otherwise, Miyagi does not disclose the following features of claim 41:

"an image recording module for recording said image data and an object image of said object supplied by said viewing unit;

said image recording module including an image sensor;

a second beam splitter mounted in said viewing beam path for directing said object image onto said image sensor;

said image sensor generating an image signal from said object image;

said image recording module further including a mixer connected to said image sensor for receiving said image signal and being connected to said image data supply for receiving said image data to mix said image signal and said image data and generate an output signal;

a video-recorder/monitor connected to said mixer for receiving said output signal for display to a surgeon;"

Applicants submit that our person of ordinary skill would not be led to Zonneveld from an examination of Miyagi and no

reason is given in the action as to why our person of ordinary skill would want to consult Zonneveld to combine the same with Miyagi.

Starting at the bottom of page 4 of the action, Zonneveld is referred to as disclosing:

"... a surgical microscope (fig. 1) with a viewing unit (3) for viewing an object (20) and defining a viewing beam path (fig. 1); an image projection module (33) for supplying data in the form of a data image (column 6, lines 6-16), including an image display unit (34 and 35) for displaying the image data; and a beam splitter (37 and 38 and column 6, lines 32-65) mounted in said viewing beam path for receiving and passing said data image to said image sensor (40) and for directing said object image being supplied from by said viewing unit (fig. 1) onto said image sensor (column 6, lines 32-65)."

From the above, there is no suggestion in the action as to how our person of ordinary skill could force fit the above elements into Miyagi to come up with the applicants' invention. There is no suggestion in either Miyagi or Zonneveld of providing an image recording module, much less, an image recording module as shown in applicants' FIG. 6 and as set forth in applicants' claim 41.

Also, on page 5 of the action, the view is expressed that:

"It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a second beam splitter and image sensor to the system of Miyagi to be able to receive and combine an object image from the viewing path as taught by Zonneveld..."

In Zonneveld, starting at column 6, line 48, the video camera 40 or sensor:

"... picks up the transmitted part of the visualization of the display unit (33) and the reflected part of the image of the operating field itself (20) and converts them into a video signal which is applied to a monitor 41." (parenthetical numerals added)

In Zonneveld, both the image data and the object image pass through the beam splitter so that here there is no second beam splitter in the sense of the applicants' invention.

In contrast to Zonneveld, applicants' claim 41 requires:

"a second beam splitter (314) mounted in said viewing beam path (321) for directing said object image onto said image sensor (325);

said image sensor (325) generating an image signal from said object image;" (parenthetical numerals added)

Thus, there is no second beam splitter devoted to an image sensor which, in turn, is connected to a mixer 340 as further provided in applicants' claim 41 with the clause:

"said image recording module (327) further including a mixer (340) connected to said image sensor (325) for receiving said image signal and being connected to said image data supply (309) for receiving said image data to mix said image signal and said image data and generate an output signal;" (parenthetical numerals added)

From the above, it can be seen that the mixer receives image data from the image data supply and the image signal of the object from the separate image sensor 325.

Applicants respectfully submit that neither Zonneveld nor Miyagi show or suggest a mixer as set forth above in applicants' claim 41.



From the foregoing, it becomes apparent that with only Miyagi and Zonneveld to consult, our person of ordinary skill could not arrive at the applicants' invention as defined in claim 41. Accordingly, claim 41 should now patentably distinguish the applicants' invention over this combination of references and be allowable.

Claims 42 to 50 are all dependent from claim 41 so that these claims too should now be allowable.

Claims 51 and 52 were rejected under 35 USC 103(a) as being unpatentable over Miyagi in view of Zonneveld and Arai as applied to claim 42 and further in view of Ernstoff et al.

Claim 51 corresponds to claim 41 except that the image projection module and the image display are defined in greater detail and the shutter is not included. Claim 52 includes all of the features of claim 41 including the shutter and differs therefrom in that the image projection module and the display unit are defined as in claim 51. The arguments advanced with respect to claim 41 above show that Miyagi is defective and that Zonneveld cannot fill the void left thereby so that claims 51 and 52 should also be allowable.

Applicants add that the features of their image projection module (see FIG. 2) which are set forth in claims 51 and 52 include:

"... an imaging optic having a plano-convex lens (37) and a plano-concave lens (33) mounted downstream of said image display unit (11) for transmitting said image data to said first beam splitter (13);"  
(parenthetical numerals added)

Arai was applied because it teaches a projection lens which

incorporates a plano-convex lens and a plano-concave lens.

This lens of Arai is a projection lens for a television projector and bears no relationship to the applicants' invention which includes an image projection module in the context of a surgical microscope. The lens of Arai is for projecting a television image onto a screen and is not disposed between an image display unit and a beam splitter. However, the conclusion is drawn in the action that it would be obvious to one of ordinary skill in the art to make use of the projection lens assembly of Arai even though this lens is for a very different purpose. No suggestion is made in the action that the projection lens of Arai would really work in the context of the surgical microscope of applicants' claim 51 or 52. Also, there is no indication in the action why our person of ordinary skill would seek out a projection lense for a television projector and attempt to force fit this into the image projection module of the applicants' invention.

Ernststoff et al was also applied against claims 51 and 52 and this reference is directed to a liquid crystal sequential color display. In the action, the view is expressed that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the reflection display of Ernststoff et al as a display means in the system of Miyagi in view of Zonneveld and Arai. Applicants call attention to the fact that none of these references provide any hint which could lead our person of ordinary skill to configure the image display unit to have a reflection display driven at clock frequency as set forth in claims 51 and 52 with the clause:

"said image display unit having a reflection display driven at a clock frequency and including a rotatably mounted filter wheel for illuminating said reflection display; and, a device for synchronizing the rotation of said filter wheel with said clock frequency of said reflection display."

The action is silent as to what in Miyagi or Zonneveld would suggest to our person of ordinary skill to conduct a search leading to Ernstoff et al. There is really no motivation in the applied references which would send our person of ordinary skill to look for a reference like Ernstoff et al. Indeed, as with Arai, Ernstoff et al too bears no relationship to the area of surgical microscopes and applicants submit that their disclosure should not be used as a roadmap for piecing together their invention from unrelated areas of the prior art. Indeed, the suggestion should come from the applied references.

In view of the above, and especially in view of the inadequacy of the combination of Miyagi and Zonneveld as shown with respect to claim 41, claims 51 and 52 should now too patentably distinguish the applicants' invention over the combination of Miyagi, Zonneveld, Arai and Ernstoff et al.

Reconsideration of the application is earnestly solicited.

Respectfully submitted,



Walter Ottesen  
Reg. No. 25,544

Walter Ottesen  
Patent Attorney  
P.O. Box 4026  
Gaithersburg, Maryland 20885-4026  
Phone: (301) 869-8950  
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